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09/932,166	08/17/2001	Aya Jakobovits	511582006000	4666

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EXAMINER
SAUNDERS, DAVID A

ART UNIT	PAPER NUMBER
1644	5

DATE MAILED: 04/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
932166	JAKOBOVITS
Examiner	**Group Art Unit**
SAUNDERS	1644

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication .
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

☐ Responsive to communication(s) filed on _____.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☐ Claim(s) 1-27 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☐ Claim(s) 1-27 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 11 9(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 1 7.2(a)).

*Certified copies not received: _____.

Attachment(s)

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☒ Notice of Reference(s) Cited, PTO-892

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Interview Summary, PTO-413

☐ Notice of Informal Patent Application, PTO-152

☐ Other _____

Office Action Summary

The claims pending and under examination are 1-27.

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

The oath/declaration fails to refer to the U.S. provisional application that applicant refers to at specification page 1.

The disclosure is objected to because of the following informalities: at page 1, line 4 applicant has not provided the serial no. of the provisional application.

Appropriate correction is required.

Claim 26 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 26 recites no feature that has not been recited in the "providing" step of claim 20.

Claims 19-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 19 "the complexed solid support" lacks antecedent basis.

In claim 20, line 6 (actual count) it is not clear what "with said multiplicity..." modifies. If it modifies the immediately proceeding recitation of "treated" the claim is confusing because it is then not clear as to whether the cells have or have not been "treated" with the solid support. Recitation of the "treating" step, as formatted in claim 1, would be appropriate for claim 20.

In claim 26 "said multiplicity of portion" lacks antecedent basis because claim 20 recites "portions", not "portion".

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 6-7, 10-12, 14-15, 18-23 and 26 are is rejected under 35 U.S.C. 103(a) as being unpatentable over Jakobovits et al. (BBRC, 100, 1484, 1981) in view of Edelman et al. (Meth Enzymol, 34, 195, 1974) and, as necessary, Edelman et al. (3,843,324).

Jakobovits et al. show experiments which have all aspects of the instant invention, except for the fact that 1) they use nonnucleated cells (erythrocytes) instead of nucleated cells, 2) they use surface treated cells (treated with neuraminidase), and 3) They use a lectin as a ligand (lectin appears to be excluded at specification para. [22] but not in the claim).

With respect to the use of nucleated cells, Jakobovits et al. teach that their method has been extended to isolating lectin receptors from lymphocytes, which are nucleated cells (page 489, last para.). Also Edelman et al. teach a like method of binding cells with their receptors to a solid support that has been derivatized with a ligand of the receptor. After washing of the support, the bound cells are mechanically removed from the derivatized support by plucking. See Figure 1 and text description thereof at pages 198+. Edelman et al. teach that such methods can be used to bind nucleated cells to the derivatized support. See teaching of various hematopoietic lineage cells, such as lymphocytes and thymocyte at pages 205-207 and 212-220.

With respect to the use of surface treated cells, none of the methods used by Edelman et al. for the isolation of lymphoid cells (e.g. page 205) employ a detergent, enzyme or other agent that would render the cells as "surface-treated."

Regarding the use of ligands which are not lectins, Jakobovits et al. teach that their method should be extendable to the study of receptors other than those for lectin. They suggest such receptors for hormones, toxins and antigens (page 1489). Also Edelman et al. teach that antigens or antibodies, as well as lectins, are used to derivative the solid support. See page 198.

They exemplify use of antigen at pages 207 and 212-220. They also suggest other ligands such as hormones or antibodies to cell surface antigen (para. spanning pages 220-221).

From the above considerations of the two references, it is clear that one would have fully expected that the method of Jakobovits et al. would be extended from the use of a lectin as a ligand, to bind erythrocytes treated with neuraminidase, to the use of numerous other types of ligands, to bind nucleated cells which have not been

surface-treated." claim 1, thus would have been obvious.

From the above discussion it is clear that dependent claims 4, 6-7 and 10 would have been obvious.

Regarding claims 11-12 and 14-15, Jakobovits et al. teach removal methods consistent with "extrusion" and "vortexing" and they teach Sepharose beads (page 1485).

Concerning claim 18, note Edelman et al. (para. spans. 198-199).

Regarding claims 2-3 and 19, note Jakobovits et al. at page 1485 (conclusion of last para.).

The combination of Jakobovits et al. with Edelman et al. is deemed proper. Jakobovits et al. teach isolation of the ligand receptor complexes from the cells --i.e. they are interested isolation of the ligand receptor complexes that are retained on the solid support after the cells have been sheared therefrom. Edelman et al. teach isolation of the cells bearing a particular receptor --i.e. they are interested in the cells that are sheared from the solid support. Despite this difference the references are properly combinable. Note that Figure 1 of Edelman et al. shows

retention of the ligand receptor complex on the solid phase following the step of "mechanical cleavage". Thus retention of this complex with surrounding cell membrane components is considered inherent to the method of Edelman et al. Note that Edelman et al. teach (para. spanning pages 208-209) that the shearing can "produce a lesion in the cell surface membrane" and that it may be necessary to appropriately incubate the sheared cells "to allow repair of any lesions produced by the removal process." Also Edelman et al. teach that the method may be used for "isolation of cell surface markers", as well as for the separation of cells (page 195). This provides a nexus between Jakobovits et al. and Edelman et al.

With respect to the recitation of "analyzing the microenivonment of the receptor", as the last step of claim 1, it is taken that the characterization of the released components by molecular weight on SDS-PAGE as taught by Jakobovits is consistent with this recitation in light of the broad disclosure of what this term encompasses at specification para. [26] and [28].

With respect to claim 20, note that Edelman et al. teachings of multiple, different ligands on different portions of a common surface (e.g. a fiber or a plastic petri dish as taught at pages 220 and 221, respectively). Thus extending the method of Jakobovits in view of Edelman et al. (as argued supra for claim 1) to the obtaining of multiple ligand receptor complexes on the different portions of a surface would have been obvious.

Dependent claim 21 is rejected for reasons, as noted supra for claims 2-3.

Dependent claim 26 is included because it adds no limitation to further limit claim 20.

Claims 22-23 are rejected, since Jakobovits et al. teach "identifying the receptors" by their molecular weight (page 1486).

Edelman et al. (3,843,324) provide teachings cumulative to the teachings of Edelman et al. (Meth. Enzymol.). The sentence spanning cols. 2-3 confirms that, indeed, their plucking method removes "a minute portion of the cell membrane" from the cells.

Claims 8, 16, 24-25 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jakobovits et al. in view of Edelman et al. as applied to claims 1, 20-22 and 26 above, and further in view of Chang (WO 84/03151).

Chang et al. teach a test device having multiple antibody coated spots, each with an antibody directed against a different cell surface antigen. The pattern of binding of a population of cells to each of these spots permits one to obtain an antigen "profile characteristic" of the membranes of the cell population -- e.g. see para. spanning pages 9-10 and 15-16; see claim 20. Thus when conducting the method of Jakobvits et al., with the use of a solid phase having multiple portions bearing different ligands as taught by Edelman et al., one would have expected to be able to use a pattern of formation of ligand/receptor complexes that develops once cells are applied to the sample to "profile" the cells. Thus claims 24-25 would have been obvious.

Regarding claim 27, note that Chang teaches monoclonal antibodies as cell capturing agents on the solid phase support portions (page 8, lines 1+).

With respect to claim 8, Chang teaches the HLA antigens are cell surface components of interest in cell typing (para. spanning pages 15-16).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jakobvitz in view of Edelman et al. as applied to claim 1 above, and further in view of Kupchik (Monoclonal Hybridoma antibodies).

Kupchik teaches (pages 87-88) that monoclonal antibodies to tumor associated antigens such as AFP aor CEA may be used to purify these antigens. One would have recognized that to isolate such antigens by immunoadsorption methods taught would require membrane disruption (e.g. by detergents, enzymes, etc.). Jakobovitz et al. teach that such disruption is undesirable and it is preferable to employ their plucking technique in order to obtain membrane components in their natural, membrane-bound mileu. One therefore would have been motivated to use monoclonal antibodies to tumor associated antigens to isolate such with their membranes, according to the method of Jakobovits/Edelman et al.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jakobovits et al. in view of Edelman et al. as applied to claim 1 above, and further in view of Seifert et al. (5,721,120).

Seifert et al. teach the further feature that sonication creates shearing forces (col. 1, lines 46-54). Since Edelman et al. teach that shearing forces are used to release cells from the solid phase (page 199), it would have been obvious to use sonication to release cells from the solid phase in the method of Jakobovits et al./Edelman et al.

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and

useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 20-27 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 21-25 and 28-31 of copending Application No. 10/209,328. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground

provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-19 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-4 and 6-20 of U.S. Patent No. 10/209,328. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims are identical except for the recitation of "optionally" prior to the last step in copending claim 1. Both sets of claims thus encompass common subject matter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Saunders, Ph.D., whose telephone number is (703) 308-3976. The examiner can normally be reached on Monday-Thursday from 8:00 a.m. to 5:30 p.m. The examiner can also be reached on alternate .

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Chan, can be reached on (703) 308-3973. The fax phone number for the organization where this application or proceeding is assigned is (703) 4242.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

D. Saunders:jmr

April 7, 2003

David A Saunders

DAVID SAUNDERS
PRIMARY EXAMINER
ART UNIT ~~182~~ 1644